

erving of commendation as having been engraved with excellent taste and printed in colors that are quite harmonious to the eye. His heavy black lines are especially impressive.

WASHINGTON.

Mr. G. N. Salisbury gives an extract from the work of Reverend Benito Viñes on the Laws of the West Indian Hurricanes, especially that part expressing his conclusion that the hurricanes are transported by the general upper current. It does not at first thought occur to one that a paper on the West Indian hurricanes would be especially interesting to the voluntary observers in Washington, but upon second thought one will see that the importance of the upper currents is thus brought to their attention, and it is greatly to be hoped that these and all other voluntary observers will pay careful attention to the exact direction of motion of the highest cirrus clouds. This is not required as an item of regular climatological observation by the Weather Bureau, but those interested in meteorology will fully appreciate its importance. Every regular station of the Weather Bureau records this datum as an important item in dynamic meteorology, and its importance was especially dwelt upon by Espy in his very

earliest circulars to the Smithsonian observers of fifty years ago. Climatological work began at an early date in this country, but the cloud observations for meteorological work were first called for when Espy, Redfield, and Loomis began their determined attack upon the problem of storm development and storm movement.

WISCONSIN.

Mr. W. M. Wilson, instead of trusting himself to comment on the Weather Bureau Convention at Omaha, has judiciously published some very interesting remarks by Mr. E. B. Calvert:

It was the first meeting of this kind, representing the service as a whole. * * * Enthusiasm reigned supreme. * * * Each seemed to realize that his work was in common with that of his colleagues; that all were striving toward one object, the perfection of the utilitarian value of the service.

WYOMING.

Mr. W. S. Palmer presents us, for the first time, with the Wyoming report in print. Wyoming has now about thirty voluntary observers, and the number will doubtless rapidly increase now that each receives these well printed monthly reports.

METEOROLOGICAL TABLES AND CHARTS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

For text descriptive of tables and charts see page 366 of REVIEW for August, 1898.

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TABLE I.—Climatological data for Weather Bureau Stations, October, 1898.

Table with columns: Stations, Elevation of instruments, Pressure, Temperature of the air, Precipitation, Wind, and various weather metrics. Rows include stations like Eastport, Portland, Boston, New York, Philadelphia, etc., with data for October 1898.

TABLE I.—Climatological data for Weather Bureau Stations, October, 1898—Continued.

Table with columns: Stations, Elevation of instruments, Pressure, Temperature of the air, Precipitation, Wind, etc. Rows include various locations like Des Moines, Dubuque, Keokuk, Cairo, Springfield, Ill., Hannibal, St. Louis, Missouri Valley, Columbia, Kansas City, Springfield, Mo., Topeka, Lincoln, Omaha, Sioux City, Pierre, Huron, Yankton, Northern Slope, Denver, Pueblo, Concordia, Dodge, Wichita, Oklahoma, Southern Slope, Abilene, Amarillo, Southern Plateau, El Paso, Santa Fe, Flag-staff, Phenix, Yuma, Independence, Middle Plateau, Carson City, Winnemucca, Salt Lake City, Northern Plateau, Baker City, Boise City, Idaho Falls, Spokane, Walla Walla, N. Pac. Coast Reg., Fort Canby, Neah, Port Crescent, Pysht, Seattle, Tacoma, Astoria, Portland, Oreg., Roseburg, Mt. Pac. C'at Reg., Eureka, Red Bluff, Sacramento, San Francisco, Point Reyes Light, S. Pac. Coast Reg., Fresno, Los Angeles, San Diego, San Luis Obispo, West Indies, Basseterre, Bridgetown, Colon, Kingston, Nassau, Port of Spain, St. Pierre, Santiago de Cuba, Santo Domingo, Willemstad, Sitka.

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record. * Two or more dates. † Received too late to be considered in departures, etc. ‡ Station at Port Angeles closed and moved to Port Crescent, about 20 miles west, October 1, 1898.

TABLE II.—Meteorological record of voluntary and other cooperating observers, October, 1898.

Table with 12 columns: Stations, Temperature (Fahrenheit) (Maximum, Minimum, Mean), Precipitation (Rain and melted snow, Total depth of snow). Rows are organized by state: Alabama, Arizona, California, and include numerous station names like Alcoa, Ashville, Birmingham, etc.

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with 15 columns: Stations, Temperature (Fahrenheit), Precipitation, Stations, Temperature (Fahrenheit), Precipitation, Stations, Temperature (Fahrenheit), Precipitation. Rows are organized by state: California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois.

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with 15 columns: Stations, Temperature (Fahrenheit) [Maximum, Minimum, Mean], Precipitation [Rain and melted snow, Total depth of snow]. Rows are organized by state: Illinois-Cont'd, Indiana-Cont'd, Iowa-Cont'd, and Kansas.

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with 15 columns: Stations, Temperature (Fahrenheit), Precipitation, and sub-columns for Maximum, Minimum, Mean, Rain and melted snow, and Total depth of snow. The table is divided into three main sections: Kansas-Cont'd., Louisiana-Cont'd., and Massachusetts-Cont'd., each listing various locations and their corresponding weather data for October 1898.

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with columns for Stations, Temperature (Fahrenheit), and Precipitation. It is divided into three main sections: Michigan-Cont'd., Minnesota-Cont'd., and Missouri-Cont'd. Each section lists various locations and their corresponding weather data for the month of October 1898.

TABLE II.—*Meteorological record of voluntary and other cooperating observers—Continued.*

Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
<i>Montana—Cont'd.</i>						<i>Nebraska—Cont'd.</i>						<i>New Hampshire—Cont'd.</i>					
Radersburg	66	31	42.6	2.00		Odell* ⁵	82	24	49.8	1.20		Keene	86	32	50.4	6.67	
St. Ignatius Mission	73	11	40.0	1.61	16.0	Ord			0.56			Lancaster				2.85	
St. Pauls†				2.68	14.0	Osceola			1.71	3.0		Littleton	84	22	47.6	3.13	1.0
Shelby	67	5	36.4	1.25	7.0	Ough†			0.40	1.0		Nashua	85	26	51.4	6.57	
Utica	66	9	37.1	1.57	8.2	Palmer b.	84	28	54.8	0.66		Newton	84	24	50.2	7.63	
Yale						Palmyra			1.34	4.3		North Conway	85	20	48.6	5.64	
<i>Nebraska.</i>						Pleasant Hill			1.56	T.		Peterboro	85	20	48.6	7.09	
Agee* ¹	83	34	44.9	2.06	7.0	Ravenna a.	83	12	48.0	0.56	0.1	Plymouth	82	21	47.9	3.98	
Alliance				T.	T.	Ravenna b.			1.59			Sanbornton	86	23	49.2	5.19	
Alma* ¹	82	30	47.0	0.25		Redcloud a.			1.13			Stratford	84	20	47.9	3.40	
Ansley†	83	11	44.8	1.08		Redcloud b* ¹	78	18	49.4	0.84		Warner				7.30	
Arapaho				0.50		Rulo			2.20	9.0		<i>New Jersey.</i>					
Arborville* ¹	80	20	45.0	1.86	T.	St. Libory			0.77	T.		Asbury Park	77	34	58.4	5.75	
Ashland a†	85	21	50.3	1.53	10.0	St. Paul			0.45	T.		Barnegat	78	37	59.8	5.25	
Ashland b* ¹	86	26	46.9	1.55		Salem* ¹	82	26	50.8	2.40	5.5	Bayonne	86	33	58.5	5.83	
Ashton				0.57	T.	Santee Agency†	82	19	46.0	3.83	4.0	Belvidere	85	25	54.0	5.62	
Auburn* ¹	90	21	51.3	2.14	7.5	Seneca* ¹	82	20	45.5	0.00		Bergen Point	80	37	57.4	7.35	
Aurora				1.53	0.2	Seward* ¹	86	27	47.9	2.09	2.0	Beverly†	85	30	57.4	5.38	
Bartley				0.63		Spragg			0.51	0.1		Billingsport* ¹	85	35	57.2	5.54	
Bassett				0.02	T.	Stanton			1.62	3.0		Bonnton	84	30	54.9	6.66	
Beatrice†	83	20	49.0	1.16	2.0	State Farm	85	21	51.8	1.37		Bridgeton	87	30	59.8	6.72	
Beaver City†	85	17	49.3	0.32	1.0	Stockham			0.90	2.0		Camden	82	35	57.0	4.48	
Bellevue				2.23		Strang* ¹	80	24	49.1	1.49	0.5	Cape May C. H.	78	33	61.0	3.99	
Benedict				1.64		Stratton			0.85			Charlotteburg	81	24	52.2	7.37	
Henkelman				1.13		Superior* ⁵	86	18	49.0	0.80		Chester	80	30	53.0	5.84	
Blair	84	24	48.4	2.93	5.0	Syracuse			1.65	4.5		Clayton	85	36	57.0	6.72	
Bluehill				1.67	T.	Taberook			2.71	5.5		College Farm	81	28	56.3	5.80	
Bradshaw				1.55		Tecumseh b†	88	21	53.0	1.48	2.0	Deckertown	82	28	53.4	4.41	
Brokenbow				3.90	T.	Tekamah	85	21	48.9	2.60	4.0	Dover	83	27	53.0	5.58	
Burchard				1.77	3.0	Theodor* ¹	82	18	46.1	0.30		Egg Harbor City	83	29	56.5	7.35	
Burwell				0.56	T.	Turlington†	86	24	50.2	1.04	4.7	Elizabeth	82	32	56.6	7.29	
Callaway†	82	20	45.8	T.	Valentine†	83	15	46.0	0.09	T.	Englewood	86	27	55.2	8.42		
Camp Clarke	97	9	45.1	0.07	0.2	Valparaiso			1.67			Flemington	85	27	55.8	4.30	
Central City				0.70	T.	Wakefield	84	16	47.4	1.71	11.0	Freehold	81	31	55.9	6.79	
Chester				1.05	T.	Wauneta			0.20	T.		Friesburg	86	31	58.2	4.98	
Clatonia	86	16	48.7	1.25	2.0	Weeping Water* ¹	84	23	46.8	2.72	10.0	Gillette	79	30	53.8	5.18	
Cody				T.	T.	Westpoint†	81	18	48.9	0.80		Hammonton				5.85	
Columbus†	80	18	47.9	1.52	T.	Whitman			0.10	1.0		Hanover	78	30	54.2	5.60	
Creighton†	80	18	45.2	1.97		Wilber* ¹	78	24	51.8	1.71	T.	Highstown	81	33	57.4	4.89	
Crete	83	22	50.8	1.44	2.8	Willard			0.25	T.		Imlaystown	86	31	58.4	4.65	
Culbertson				2.52		Wilsonville* ¹	82	18	48.0	0.35	0.5	Lambertville	82	28	57.0	5.16	
Curtis a.	83	17	48.7	0.33		Wisner* ⁵	76	26	49.6	2.31	3.2	Lebanon				5.37	
David City	80	21	46.0	1.65	4.0	Wymore* ¹	81	20	49.5	0.65	1.5	Moorestown	85	30	57.6	5.42	
Dawson	90	21	52.7	2.29	8.0	York* ¹	84	20	47.2	1.20		Newark b.	80	34	56.2	7.18	
Eden				1.70	4.5	<i>Nevada.</i>						New Brunswick a.	86	30	58.3	5.88	
Ericson* ¹	82	12	44.8	0.35		Austin	68	24	45.2	0.24	T.	Newton	81	25	52.3	4.33	
Ewing†				1.08	5.0	Battle Mountain* ¹	68	22	41.0	0.10	1.0	Ocean City	77	32	58.4	6.82	
Fairbury†	84	18	49.8	1.89	1.0	Beowawe* ¹	78	23	44.7	0.28	3.0	Oceanic	80	33	56.4	6.88	
Fairfield	82			2.00	0.5	Blaine	74	10	41.4	0.73	4.0	Paterson	86	32	57.6	6.23	
Fairmont†	84	22	46.8	2.15	0.5	Burkerville			0.00			Perth Amboy	80	34	56.7	5.54	
Fort Robinson	80	6	43.9	0.33	3.3	Candelaria	85	26	55.0	0.02	0.2	Plainfield	81	29	54.7	5.77	
Franklin	87	20	49.6	2.10		Carlin* ¹	66	15	39.2	0.00		Ranococas				5.60	
Freemont†	83	18	47.8	2.05	6.5	Carson City	76	21	48.4	0.67	0.8	Rivervale	84	26	54.0	4.59	
Geneva†	83	20	47.9	2.14	3.0	Clover Valley			0.44	0.7		Roseland	83	26	53.6	6.72	
Genoa	80	19	47.9	1.13	1.7	Cranes Ranch			0.35			Salem	87	30	59.1	5.60	
Gering				0.57	T.	Elko* ¹	68	18	39.1	0.20	T.	Somerville	83	29	56.6	4.98	
Gothenburg	82	14	45.4	1.03	T.	Ely	71	12	44.0	0.20	2.0	South Orange	78	34	55.2	6.39	
Grand Island a.				0.67	T.	Empire Ranch	71	20	45.6	T.		Staffordville				4.98	
Grand Island b.	81	19	46.4	1.32	T.	Fenelon* ¹	68	10	36.0	0.32	1.0	Toms River	84	25	56.6	6.10	
Greeley				T.		Golconda* ¹	62	20	40.9	0.00		Trenton	86	36	60.2	5.38	
Haigler				0.80	0.5	Halleck* ¹	70	10	36.3	0.27		Tuckerton	82	30	57.0	6.14	
Hartington†	82	19	45.2	2.30	17.5	Hawthorne a* ¹	75	38	53.8	0.01	T.	Vineland	84	30	58.3	5.83	
Harvard	81	17	48.2	1.62	T.	Hawthorne b.	80	30	52.6	0.01	T.	Woodbine	80	30	58.0	5.14	
Hastings* ¹	84	25	47.9	1.82	T.	Hot Springs			T.			<i>New Mexico.</i>					
Hay Springs	78	13	46.4	0.25	1.5	Humboldt* ¹	78	25	48.6	0.20	2.0	Albert	87	26	56.2	0.07	
Hebron†	83	18	50.3	1.12	0.5	Lewers Ranch	75	23	49.2	1.41		Albuquerque†	82	24	55.7	0.15	
Hickman				1.70	3.0	Los Vegas	74	33	54.6	0.00		Alma	85	24	55.4	0.00	
Holdrege b.				0.73		Lovelocks* ¹	75	30	49.9	T.		Azteco†	81	15	50.7	0.00	
Hooper* ¹	79	20	46.4	1.61	2.0	Martins	76	22	48.6	0.28		Bernalillo†	82	26	55.8	0.12	
Imperial†	90	17	48.6	0.30	1.5	Mill City* ¹	86	25	50.3	0.00		Bluewater	76	14	47.1	0.00	
Johnstown				T.	T.	Monitor Mill	72	12	43.6	0.22		Buckmans	72	5	39.2	0.64	
Kearney				0.65		Pallsade* ¹	59	15	36.0	0.00		Clayton	87	24	55.1	0.07	T. 0.8
Kennedy	84	10	44.8	0.30	2.5	Palmetto	80	15	47.0	0.38		Deming* ¹	90	38	61.4	0.00	
Kimball†	86	15	45.6	0.65	3.0	Panaca	82	19	50.0	T.		East Las Vegas†	76	15	49.8	0.38	1.0
Kirkwood* ¹	84	15	44.0	0.19	1.0	Reno* ¹	80	31	51.1	T.		Eddy	94	24	59.8	0.00	
Lexington†	80	12	47.0	0.73	1.0	Reno State University	74	20	47.3	0.24	0.6	Engle†	81	22	53.2	0.00	
Lincoln b.	84	21	50.8	1.47	T.	Ruby Valley			0.36	1.8		Espanola	81	21	51.0	0.60	
Lodgepole†	90	12	45.5	0.10	1.0	St. Clair	79	22	47.6	0.08		Folsom	82	12	48.0	1.45	8.5
Loup b* ¹	80	10	46.0	0.42	T.	Silverpeak	86	24	54.6	T.		Fort Bayard	85	25	58.0	0.00	
Lynch* ¹	85	13	44.5	0.79	1.0	Sodaville	84	28	53.3	0.01		Fort Union	87	12	49.4	0.35	T.
Lyons				2.10	3.8	Tecoma* ¹	78	20	48.8	0.00		Fort Wingate	84	19	53.3	0.00	
McCook				0.44	T.	Toano* ¹	68	20	41.7	0.20	2.0	Galisteo	86	23	54.6	0.00	
McCool				1.83		Tuscarora	64	8	39.1	0.39	0.5	Gallinas Spring†	85	22	57.0	T.	T.
Madison	80	17	46.8	1.24	3.0	Tybo	70	25	47.6	0.00		Gila	87	27	58.6	T.	
Madrid* ⁵	85	20	46.8	T.	T.	Verdi* ¹	76	22	50.0	0.05		Hillsboro	84	26	55.0	0.00	
Marquette				1.10	0.5	Wadsworth* ¹	74	14	48.5	0.22		Laluz	89	31	62.1	T.	
Merriman																	

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with 12 columns: Stations, Temperature (Fahrenheit) (Maximum, Minimum, Mean), Precipitation (Rain and melted snow, Total depth of snow). The table is divided into three sections: New Mexico—Cont'd., New York—Cont'd., and North Dakota—Cont'd. Each section lists various weather stations and their corresponding data for the month of October 1898.

TABLE II.—*Meteorological record of voluntary and other cooperating observers—Continued.*

Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
<i>Ohio—Cont'd.</i>						<i>Oregon—Cont'd.</i>						<i>Pennsylvania—Cont'd.</i>					
Portsmouth b	86	30	56.6	3.59		Merlin *1	70	30	47.3	1.07		Reading			54.6	3.75	
Ridgeville Corners	82	22	52.2	2.89		Monmouth a	77	37	49.4	1.65		Renovo a				6.02	
Ripley	82	26	55.9	2.45	T.	Monmouth b	77	33	50.6	0.79		Renovo b	80	24	53.6	5.68	
Rittman	85	23	51.1	4.64		Monroe	77	35	51.0	1.71		Ridgway†				5.31	0.8
Rockyridge	91	24	54.3	3.37		Moro	77	34	47.2	0.26		Saegertown	86	21	53.0	4.20	T.
Rosewood	84	30	53.4	4.17		Mount Angel†	77	29	51.0	2.33		St. Marys	81	21	50.6	5.50	
Seaman	83	23	54.9	3.31		Newberg	73	30	50.8	2.14		Salem Corners	84	24	50.6	4.11	
Sidney b	90	27	53.4	4.80		Newport	81	41	53.9	5.81		Scranton	82	24	53.7	3.07	
Sinking Spring	85	29	56.0	3.45	T.	Pendleton	83	23	50.9	0.59		Seisholtzville				5.90	
Somerset†				3.43		Placer				2.14		Selinsgrove	84	25	55.0	6.22	T.
Springboro				3.27		Prineville	81	21	54.4	0.05		Shawmont				4.44	
Strongsville				5.59		Riddles *1	85	35	51.4	1.47		Shinglehouse				2.98	1.0
Sylvania	89	23	50.4	3.42		Salem b†	79	34	51.5	4.45		Sinnamahoning				6.34	
Thurman	90	26	57.7	2.11		Sheridan *1	86	36	50.0	0.73		Smethport	80	20	50.3	4.95	T.
Tiffin	86	29	53.2	4.30	T.	Silver Lake	75	12	41.2	0.56	1.3	Smiths Corners				5.37	
Upper Sandusky	92	23	55.0	4.03		Silverton *1	80	29	51.5	2.39		Somerset	78	20	49.5	5.52	T.
Urbana	84	24	52.8	3.60		Siskiyou *1	80	24	59.5	0.00		South Bethlehem	85	38	60.4		
Vanceburg	82	27	56.0	3.00		Sparta	83	35	43.5	0.85		South Eaton	83	32	53.3	4.49	
Vermillion	87	27	52.7	5.02	T.	Springfield *1	88	32	49.5	1.21		State College	79	23	51.8	6.51	T.
Vickery	82	27	54.3	5.28		Stafford	72	22	51.6	2.41		Sunbury				2.97	
Walnut				2.85		The Dalles†	83	31	51.5	0.13		Swarthmore	84	34	56.4	5.35	
Warren	87	24	53.2	4.22		Tillamook Rock				3.66		Towanda	82	25	52.3	5.86	T.
Warsaw	92	21	52.9	5.12		Toledo	76	33	56.8	2.40		Trout Run				6.14	
Wayseon	89	25	53.1	3.42	T.	Umattila				0.18		Uniontown	83	30	53.9	5.83	
Waverly	92	26	56.6	2.66		Yale	70	15	44.8	0.77		Warren†	83	23	51.5	5.13	0.5
Waynesville	86	25	53.2	3.39		Yernonia	60	27	46.8	3.17		Wellsboro†	82	25	51.3	8.62	T.
Wellington	88	26	53.0	3.83	T.	West Fork *1	70	36	49.9	0.63		West Chester	83	31	56.2	5.15	
Westerville	86	29	51.4	4.04		Weston	73	25	48.8	0.95		West Newton†				4.43	
Willoughby				4.39		Williams	75	27	50.0	1.14		Westtown	81	30	54.8	4.75	T.
Wooster b	86	24	52.6	4.38	T.	<i>Pennsylvania.</i>						White Haven	81	21	51.6	5.70	
Youngstown	87	25	53.0	4.30	T.	Altoona	81	22	52.0	7.44		Wilkesbarre†	82	27	53.6	2.36	
Zanesville				3.43		Aqueduct	87	27	56.9	6.58		Williamsport	83	27	53.8	5.92	
<i>Oklahoma.</i>						Athens	86	22	52.4	4.94		York†	85	26	54.8	4.31	
Anadarko	104	21	62.0	0.48		Beaver Dam				3.33	T.	<i>Rhode Island.</i>					
Arapaho†	98	22	59.9	0.79		Bethlehem				4.44		Bristol	74	35	54.8	9.47	
Burnett†	97	23	58.1	1.50		Brookville†				4.47		Kingston	80	30	52.7	12.05	
Clifton†	101	22	60.2	2.79		Browsers Lock				4.92		Lonsdale				7.76	
Edmond				1.53		Cameron				6.23		Pawtucket	86	36	55.2	7.76	
Fort Renot	100	21	59.9	2.27		Carlisle	82	26	53.5	6.07		Providence a	82	36	55.1	8.43	
Fort Sill	99	27	60.1	1.66		Cassandra	77	23	50.4	7.12	T.	Providence c	83	32	53.6	8.68	
Guthrie	98	30	60.8	2.95		Cedarurn				4.40		<i>South Carolina.</i>					
Hennessey	98	22	59.6	0.90		Centerhall†	79	24	52.7	6.70		Allendale	86	31	61.4	3.85	
Hopeton	97	25	58.1	1.22		Chambersburg†	83	24	54.2	5.67		Anderson†				4.33	
Jefferson	102	23	61.4	1.25		Coatesville	86	29	55.9	4.76		Batesboro†	89	32	63.4	2.20	
Kingfisher	101	22	58.8	1.83		Confuence†	84	21	52.7	5.22		Blackville†	90	31	65.0	3.25	
Mangum†	100	22	60.8	0.60		Coopersburg	90	30	57.2	6.05		Camden†				3.41	
Newkirk	99	22	57.7	1.62		Davis Island Dam†				4.39		Central	83	31	60.6	5.43	
Norman	100			1.27		Derry Station	92	23	56.4	4.84		Cheraw a†	90	33	62.6	1.85	
Pawhuska	91	27	58.2	1.44		Doylestown				5.14		Cheraw b†				2.51	
Prudence†				0.91		Driftwood				6.51		Clemson College a	86	31	60.6	5.94	
Putnam†	99	24	57.0	0.67		Duncannon				7.29		Conway†				2.73	
Sac and Fox Agency	100	24	62.8	3.55		Dunshore	81			4.86	T.	Darlington				1.87	
Stillwater†	99	26	60.2	4.19	T.	Lyberry	80	25	50.1	4.62	T.	Edisto†				2.94	
Waukomis	110	26	60.5	0.95		East Bloomsburg				3.04		Ettingham†				2.21	
Winview	102	25	60.6	1.63		East Mauch Chunk	82	28	53.5	6.31		Florence	89	35	64.4	1.94	
Woodward	95	23	56.0	1.70		Easton	83	30	54.6	5.64		Gaffney†				3.78	
<i>Oregon.</i>						Ellwood Junction†				4.33		Gillisonville	87	35	66.5	7.81	
Albany a	72	35	52.6	1.31		Emporium	79	22	52.8	6.24	T.	Greenwood	85	30	60.1	5.59	
Albany b				1.68		Everett	81	22	51.6	8.23	T.	Holland	86	28	58.8	6.53	
Arlington	75	30	51.4	0.07		Farrandville				6.11		Kingstree a†	90	33	64.3	1.90	
Ashland b	75	28	50.5	1.41		Forks of Neshaminy *1	81	36	57.8	4.61		Kingstree b				1.97	
Aurora *1	70	35	50.6	1.64		Franklin	89	23	52.8	4.42		Little Mountain	89	29	61.6	2.16	
Aurora (near)	70	34	50.4	2.06		Frederick				4.34		Longshore†	88	29	60.2	2.33	
Bandon	66	38	53.4	3.35		Freeport†				5.06	T.	Mount Carmel†				6.3	
Bay City†	66	36	51.8	8.51		Girardville				6.18		Pinopolis *1	81	40	64.1	4.52	
Beulah	68	18	44.8	0.88	T.	Grampian	78	22	50.2	5.21	T.	Port Royal†	82	40	67.4	6.00	
Brownsville *1	72	34	52.4	1.12		Greensboro†	88	24	55.9	5.79		St. George†	86	36	64.7	3.28	
Burns	73	11	41.1			Greenville				3.80		St. Matthews†	87	36	63.9	2.11	
Burns (near)	78	15	46.9	0.00		Hamburg	83	30	55.9	6.72		St. Stephens†				2.00	
Cascade Locks	66	40	51.9	3.36		Hawley	86	27	53.4	4.79	T.	Santuck†	87	31	60.8	3.54	
Comstock *1	75	30	51.6	2.10		Hews Island Dam				3.90		Shaws Fork	87	31	63.4	4.88	
Coquille River				3.57		Hollidaysburg	85	20	53.6	4.79		Smiths Mills†				3.04	
Corvallis	71	33	50.6	1.59		Huntingdon a†	83	24	54.4	8.46		Society Hill†	86	37	63.0	1.58	
Dayville†	79	24	49.8	1.16		Huntingdon b†				6.54		Spartanburg	85	32	59.9	4.90	
Ella				0.60		Irwin				3.93		Statesburg†	87	36	64.4	3.61	
Fairview	76	36	55.4	3.33		Johnstown†	83	26	54.3	5.89	T.	Summerville	83	38	64.4	7.66	
Falls City	69	35	49.6	8.99		Karthauss				1.80		Trenton	85	34	65.0	4.18	
Forestgrove	63	32	50.4	1.59		Keating				6.71		Trial	81	32	62.6	4.90	
Gardiner	67	40	53.5	3.37		Kennett Square	84	29	56.4	5.23		Walhalla	86	31	58.0	5.45	
Glenora	70	30	49.6	5.40		Lansdale				4.84		Wolling	86	32	61.8	2.11	
Government Camp	73	26	42.8	4.71	4.0	Lawrenceville	83			4.88		Yemassee†	87	35	65.6	1.98	
Grants Pass a†	77	30	51.8	1.40		Lebanon	81	26	54.7	5.38		Yorkville	86	35	62.6	5.94	
Happy Valley	71	13	42.8	0.88		Leroy†	82	24	51.2	5.37	0.1	<i>South Dakota.</i>					
Heppner	77	25	48.0	0.40		Lewisburg	83	25	53.6	5.76		Aberdeen†	76	19	40.2	2.50	3.0
Hood River (near)	65	33	49.0	1.15		Lock Haven a†	85	24	55.5	5.28		Ashcroft†	75	10	41.2	1.08	6.0
Jacksonville	72	31	49.9	1.25		Lock Haven b†				5.19	T.	Bowdle	87	18	38.0	0.93	5.0
Joseph	64	22	40.2	1.49	3.0	Lock No. 4†				3.78		Brookings†	76	15	41.6		
Junction City *1	84	35	52.5	1.88		Lycippus	86	27	55.0	5.04		Canton	76	18	44.8	1.08	
Kerby	74	31	51.6	2.66		Miffin				5.60		Centerville				1.77	8.2
Klamath Falls	71	22	46.4	0.67	0.5	Oil City†				5.18	1.0	Chamberlain†	88	19	48.		

TABLE II.—Meteorological record of voluntary and other cooperating observers—Continued.

Table with 12 columns: Stations, Temperature (Fahrenheit) [Maximum, Minimum, Mean], Precipitation [Rain and melted snow, Total depth of snow]. Rows are categorized by state: South Dakota, Texas, Utah, Tennessee, Virginia, Washington.

TABLE II.—*Meteorological record of voluntary and other cooperating observers—Continued.*

Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.													
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.												
<i>Washington—Cont'd.</i>						<i>Wisconsin—Cont'd.</i>						<i>Michigan.</i>																	
Lakeside	65	30	48.9	0.03		Lincoln	75	27	48.4	4.02	3.0	Iron River	92	24	56.0	2.10													
Lapush	56	38	46.8	5.98		Madison†	74	24	47.5	3.08	1.5	Minnesota.																	
Lind	77	32	49.0	0.34		Manitowoc†	75	17	47.5	4.61	4.0	Fergus Falls				1.45													
Loomis	66	39	48.0	0.18		Meadow Valley†	75	11	44.6	4.89	4.0	Mississippi.																	
Madrona†	64	36	50.6	4.58		Medford†	77	13	43.0	5.50	1.0	Brookhaven	98	57	77.4	6.75													
Mayfield	70	31	50.9	3.03		Menasha				2.72	2.0	Stouington*1	90	62	75.9														
Moxee Valley†	75	33	47.5	0.21		Neillsville	80	20	44.9	4.79		Montana.																	
New Whatcom	68	31	50.5	3.60		New Holstein	80	13	48.3	3.95	4.0	Dearborn Canyon	87	33	56.1	0.63													
Olga	61	35	47.9	3.31		New London	76	15	46.0	3.50	2.0	Glasgow	85	31	55.4	2.02													
Olympia†	68	33	50.5	2.51		North Crandon	72	20	42.4	1.34	5.5	Nevada.																	
Orcas Island	65	33	50.9	2.68		Oconto	81	16	47.3	4.12	3.0	Bradshaw				2.80													
Pinehill†	68	30	49.8	0.54		Oseola†	81	15	43.9	5.67	T.	Chester				2.65													
Pomeroy	67	36	50.4	0.57		Oshkosh	77	22	47.0	3.50	2.0	Johnstown				0.39													
Port Townsend	65	42	52.6	1.65		Pepin	80	20	45.4	4.67		Minden b				4.37													
Pullman†	68	27	46.0	0.69		Pine River†	75	12	46.0	3.12	3.9	Palmyra*1	96	43	64.9	2.88													
Rosalia†	70	21	45.2	0.95		Portage†	75	13	43.8	3.27	4.0	Paxton				2.46													
Sedrot	73	32	52.2	3.80		Port Washington	79	15	48.6	4.05	0.1	Willard				1.98													
Shoalwater Bay*10	61	44	52.7			Prairie du Chien	79	22	49.0	3.90	2.0	New Mexico.																	
Sylvania	65	37	48.1	4.41		Prentice*1	73	14	39.4	4.27	0.3	Folsom				1.08	4.0												
Snohomish†	64	31	50.3	6.95		Racine	88	22	45.6	3.13		New York.																	
Snoqualmie Falls.				4.42		Sharon	78	19	48.3	2.94	3.0	Madison Barracks	92	35	64.0	1.35													
Southbend	71	33	51.8	5.65		Shawano	77	13	44.6	3.03	4.0	Palermo				4.08													
Stampede*	65	31	42.8	3.19		Spooner	81	22	44.8	3.01	0.5	South Dakota.																	
Sunnyside†	76	25	49.6	0.11		Stevens Point†	75	22	44.1	4.52	6.0	Leslie	106	20	62.8	0.00													
Tunnel	70	30	45.2	4.90		Sturgeon Bay Canal*10	72	27	47.8			Montrose				1.07													
Union City†	64	31	49.8	6.47		Two Rivers*10	74	30	49.7			Tennessee.																	
Vancouver	69	33	51.1	1.84		Valley Junction†	75	18	45.1	4.74	2.0	Peryear*5	96	51	74.2	4.32													
Vashon†	65	37	50.0	2.23		Viroqua	72	23	46.0	5.02	2.0	Mexico.																	
Waterville*		11	42.7	T.		Watertown†	75	17	47.0	4.20	3.0	Puebla	78	49	63.1	8.10													
<i>West Virginia.</i>						<i>Wyoming.</i>						EXPLANATION OF SIGNS.																	
Beverly†	82	20	53.3	6.29	1.0	Basin	74	16	41.3	1.13		* Extremes of temperature from observed readings of dry thermometer.																	
Bluefield				6.36	T.	Big Horn Ranch	66	11	35.0	1.59	19.0	† Weather Bureau instruments.																	
Buckhannon a†				6.02		Big Piney	63	7	33.9	0.10	1.0	A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:																	
Burlington†	85	21	50.8			Carbon	74	15	41.3	0.67		1 Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. + 4.																	
Charleston†	82	20	52.6	5.05		Evanston	66	16	37.9	1.94	12.5	2 Mean of 8 a. m. + 8 p. m. + 2.																	
Dayton†	91	20	54.6	4.89	T.	Port Laramie	82	10	43.0	0.44	1.0	3 Mean of 7 a. m. + 7 p. m. + 2.																	
Eastbank	84	30	61.0	2.69	T.	Port Washakie	71	13	40.0	1.75	17.5	4 Mean of 6 a. m. + 6 p. m. + 2.																	
Elkhorn†	81	29	55.7	4.25	T.	Port Yellowstone.	67	12	36.0	2.25	9.0	5 Mean of 7 a. m. + 2 p. m. + 2.																	
Fairmont†	84	23	54.4	4.91	T.	Greenriver	66	15	38.9			6 Mean of readings at various hours reduced to true daily mean by special tables.																	
Glennville†	90	22	55.6	4.92	T.	Labarge	68	4	36.2	0.20	2.0	7 Mean from hourly readings of thermograph.																	
Grafton†	90	22	55.6	4.92	T.	Laramie	70	7	39.0	0.48	5.2	8 Mean of 7 a. m. + 2 p. m. + 9 p. m. + 3.																	
Green Sulphur	87	24	56.7	3.04		Lovell		14		0.74	3.4	9 Mean of sunrise and noon.																	
Harpers Ferry				8.50		Lusk	75	11	39.2	0.54		10 Mean of sunrise, noon, sunset, and midnight.																	
Hinton a†	84	26	56.8	4.58		Sheridan	74	12	40.8	1.15	10.2	The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.																	
Huntington	87	27	56.1	3.34		Wamsutter	65	25	44.9	0.60	6.0	An italic letter following the name of a station, as "Livingston a," "Livingston b," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "a" denotes 14 days missing.																	
Kingwood	84	21	53.9	6.16	T.	Wheatland	74	18	47.1	0.19	0.5	No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.																	
Martinsburg†	82	26	54.4	5.09		<i>Mexico.</i>						CORRECTIONS.																	
Morgantown b†	93	23	56.5	5.56		Ciudad P. Diaz	94	40	72.0	0.06		Missouri, Conception, February, 1898, make mean temperature 31.1 instead of 37.1.																	
New Cumberland	95	27	56.2	3.73		Coatzacoalcas 2			78.3			California, Newhall, March, 1898, make mean temperature 49.3 instead of 44.3.																	
New Martinsville	95	26	57.3	5.27		Leon de Aldemas	80	37	61.8	0.76		Illinois, Albion, April, 1898, make mean temperature 52.5 instead of 49.2; Havana, April, 1898, make mean temperature 52.0 instead of 22.0.																	
Oldfields	83	22	54.0	5.31		Puebla.	78	35	58.5	2.35		Indiana, Auburn, April, 1898, make mean temperature 45.2 instead of 43.6.																	
Phillipi a	89	24	55.6	5.19	T.	Tampico 2			74.4			Michigan, Romeo, June, 1898, make mean temperature 68.3 instead of 93.3.																	
Point Pleasant†	88	26	57.0	3.15		Topolobampo				0.00		Arkansas, Picaune, July, 1898, make precipitation 1.06 instead of 0.53.																	
Powellton	82	28	56.2	3.59		Vera Cruz 2			77.2			Georgia, Mt. Vernon, July, 1898, make precipitation 10.00 instead of 9.50.																	
Romney	81	25	55.7	5.69		<i>New Brunswick.</i>						Oregon, Newberg, July, 1898, make precipitation 0.94 instead of 0.99.																	
Rowlesburg†				2.48		St. John	67	30	47.0	8.09		South Carolina, Longshore, July, 1898, make precipitation 10.92 instead of 9.92.																	
Upper Tract	85	20	55.2	5.82		Puerto Rico.						Wisconsin, Hayward, July, 1898, make precipitation 1.49 instead of 1.44; Chat, July, 1898, make precipitation 1.13 instead of 1.30.																	
Weston b				5.63		Guayama	82	68	74.1																				
Weston d	86	25	55.0			Luquillo	80	69	78.1	20.71																			
Wheeling a†				3.37	T.	Ponce*1	86	72	78.1																				
Wheeling b†	91	30	57.6	3.97	T.																								
White Sulphur Springs.	81	19	55.6	5.70		<i>Late reports for September, 1898.</i>																							
<i>Wisconsin.</i>						<i>Alabama.</i>						<i>Arizona.</i>						<i>California.</i>											
Amherst	77	11	44.8	3.85	4.0	Healing Springs	93	58	75.2	8.10		Riverton				2.74		Rye	110	40	75.4	0.00		Arlington Heights	112	47	75.4	0.00	
Barron	68	20	41.0	4.64	0.2	<i>Georgia.</i>						<i>Indian Territory.</i>						<i>Iowa.</i>											
Bayfield	74	25	45.6	3.40		Piscola				T.		Tahlequah	96	45	79.4	12.13		Eldora	95	34	68.8								
Beloit	75	20	48.8	2.44	3.0	<i>Kansas.</i>						<i>Massachusetts.</i>																	
Brodhead	75	16	48.8	3.90	4.0	Newton	100	37	71.7	0.91		Leicester Hill	90	37	64.8	3.93		Provincetown	88	42	65.0	0.93							
Chilton	78	11	46.6	2.12	2.0																								
Citypoint	79	20	45.6	4.74	2.0																								
Delavan	78	14	48.7	4.55	2.0																								
Dodgeville	76	18	45.4	4.52	5.0																								
Easton	77	10	45.4	3.37	4.0																								
Eau Claire	78	22	45.8	5.13	T.																								
Flourace†	75	14	42.2	2.56	0.5																								
Fond du Lac	80	14	47.8	4.06	1.0																								
Grand River Locks				3.59	6.0																								
Grantsburg†	82	19	44.0	5.30																									
Hartford	81	9	48.6	4.99	6.0																								
Hartland	79	17	48.6	4.04	4.0																								
Harvey	75	21	47.4	4.76	3.2																								
Hayward	80	20	45.6	5.19	T.																								
Headford Junction*1	72	15	42.4	3.12	2.0																								
Hillsboro	78	14	46.6	4.52	5.0																								
Knapp	80	21	43.6	4.45	T.																								
Koepenck*+1	66	30	49.4	4.00	2.0																								
Lancaster†	76	21	45.8	3.61	2.0																								

TABLE III.—Data furnished by the Canadian Meteorological Service, October, 1898.

Table with 3 main columns: Stations, Pressure, Temperature, and Precipitation. Each column has sub-columns for different measurement types (e.g., Mean not reduced, Mean reduced, Departure from normal, Mean, etc.). Data is provided for various locations including St. Johns, N. F., Sydney, C. B. I., Halifax, N. S., Grand Manan, N. B., Yarmouth, N. S., Charlottetown, P. E. I., Chatham, N. B., Father Point, Que., Quebec, Que., Montreal, Que., Rockliffe, Ont., Ottawa, Ont., Kingston, Ont., Toronto, Ont., White River, Ont., Port Stanley, Ont., Saugeen, Ont., Parry Sound, Ont., Port Arthur, Ont., Winnipeg, Man., Minnedosa, Man., Qu'Appelle, Assin., Medicine Hat, Assin., Swift Current, Assin., Calgary, Alberta, Banff, Alberta, Edmonton, Alberta, Prince Albert, Sask., Battleford, Sask., Kamloops, B. C., Esquimaux, B. C., and Hamilton, Bermuda.

TABLE IV.—Mean temperature for each hour of seventy-fifth meridian time, October, 1898.

Table with 24 columns representing hours of the day (1 a.m. to 11 p.m., Noon, 1 p.m., 2 p.m., 3 p.m., 4 p.m., 5 p.m., 6 p.m., 7 p.m., 8 p.m., 9 p.m., 10 p.m., 11 p.m., Midn't., Mean) and 24 rows of stations. Stations include Bismarck, N. Dak., Boston, Mass., Buffalo, N. Y., Chicago, Ill., Cincinnati, Ohio, Cleveland, Ohio, Detroit, Mich., Dodge, Kans., Eastport, Me., Galveston, Tex., Havre, Mont., Kansas City, Mo., Key West, Fla., Memphis, Tenn., New Orleans, La., New York, N. Y., Philadelphia, Pa., Pittsburg, Pa., Portland, Oreg., St. Louis, Mo., St. Paul, Minn., Salt Lake City, Utah, San Diego, Cal., San Francisco, Cal., Savannah, Ga., and Washington, D. C. Below these are West Indies: Basseterre, St. Kitts, Colon, U. S. C., and Willemstad, Curaçao.

TABLE V.—Mean pressure for each hour of seventy-fifth meridian time, October, 1898.

Table with 24 columns representing hours of the day (1 a.m. to 11 p.m., Noon, 1 p.m., 2 p.m., 3 p.m., 4 p.m., 5 p.m., 6 p.m., 7 p.m., 8 p.m., 9 p.m., 10 p.m., 11 p.m., Midn't., Mean) and 24 rows of stations. Stations include Bismarck, N. Dak., Boston, Mass., Buffalo, N. Y., Chicago, Ill., Cincinnati, Ohio, Cleveland, Ohio, Detroit, Mich., Dodge, Kans., Eastport, Me., Galveston, Tex., Havre, Mont., Kansas City, Mo., Key West, Fla., Memphis, Tenn., New Orleans, La., New York, N. Y., Philadelphia, Pa., Pittsburg, Pa., Portland, Oreg., St. Louis, Mo., St. Paul, Minn., Salt Lake City, Utah, San Diego, Cal., San Francisco, Cal., Savannah, Ga., and Washington, D. C. Below these are West Indies: Basseterre, St. Kitts, Bridgetown, Barb., Colon, U. S. C., and Willemstad, Curaçao.

TABLE VI.—Average wind movement for each hour of seventy-fifth meridian time, October, 1898.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Ablene, Tex.	8.5	8.6	8.4	8.9	8.4	8.3	8.4	7.8	8.8	10.7	12.8	13.3	13.2	12.8	12.8	13.0	12.8	12.3	11.1	8.0	8.4	8.0	8.4	8.9	10.1
Albany, N. Y.	5.4	5.3	5.5	5.2	5.6	5.8	5.8	6.8	7.2	9.0	9.4	10.2	11.0	11.7	11.3	10.1	8.9	7.5	6.8	6.3	6.8	6.4	6.2	5.5	7.5
Alpena, Mich.	9.4	9.4	9.4	9.4	8.8	8.9	9.1	9.8	10.9	11.6	13.0	13.4	13.6	13.6	13.5	12.7	12.4	11.5	11.6	11.3	11.5	10.8	10.5	9.7	11.1
Amarillo, Tex.	18.6	18.5	18.2	17.8	17.8	17.3	16.0	15.3	15.4	16.2	20.3	21.7	22.0	21.6	20.9	21.1	20.9	21.2	19.9	16.0	15.2	15.9	16.8	18.3	18.5
Atlanta, Ga.	9.7	10.2	10.6	10.5	10.4	10.1	9.4	9.8	10.2	11.0	11.2	10.9	10.8	10.8	10.5	10.2	9.9	9.5	8.5	9.4	9.2	9.5	10.1	10.3	10.1
Atlantic City, N. J.	10.4	10.6	10.5	10.8	10.9	10.6	11.3	12.5	12.9	13.7	13.9	13.7	13.6	13.8	13.4	13.4	12.2	11.2	11.1	11.7	11.5	11.2	11.0	10.6	11.9
Augusta, Ga.	6.3	5.9	5.9	6.2	6.1	5.6	6.1	6.7	7.8	8.7	9.5	9.1	9.5	10.0	9.8	9.3	9.0	7.6	6.7	6.8	6.5	6.3	6.8	6.6	7.5
Baker City, Oreg.	5.1	5.5	5.7	5.6	5.8	6.2	5.8	5.7	5.1	5.3	4.5	3.7	3.1	4.0	4.7	5.1	5.6	6.0	5.4	4.2	3.1	3.8	3.9	4.8	4.9
Baltimore, Md.	4.3	4.2	3.8	4.0	3.8	3.6	4.2	4.8	5.9	6.7	7.2	7.3	7.6	7.7	7.7	7.5	6.5	5.8	5.2	5.3	4.9	4.8	4.6	4.1	5.5
Bismarck, N. Dak.	10.5	9.9	9.8	9.7	8.8	8.6	9.6	9.6	9.4	9.7	10.6	11.9	12.9	13.8	14.7	14.9	15.4	13.8	11.8	10.5	11.1	11.5	11.3	10.5	11.5
Block Island, R. I.	16.1	15.9	15.8	15.7	15.3	15.8	16.1	17.0	17.8	16.9	17.3	16.8	17.5	17.9	17.1	15.8	15.4	15.3	15.3	16.2	16.4	15.5	15.4	15.6	16.2
Boston, Mass.	10.6	10.3	9.8	9.8	9.8	9.8	10.6	10.7	11.3	11.9	12.3	12.3	12.7	13.4	13.0	12.7	12.1	11.2	12.2	11.2	11.4	11.4	10.6	10.5	11.3
Buffalo, N. Y.	14.0	13.9	14.4	14.2	13.8	13.5	13.6	14.3	13.5	15.5	15.7	15.8	16.2	16.4	16.4	16.3	16.1	16.3	16.5	16.8	16.7	15.4	14.3	13.6	16.1
Cairo, Ill.	7.7	7.8	7.4	7.1	7.6	7.5	7.5	7.6	8.3	9.3	10.0	10.6	10.8	11.2	10.7	10.5	10.4	8.7	7.3	6.9	7.4	7.2	7.5	7.5	8.5
Cape Henry, Va.	15.4	15.0	14.6	15.0	15.2	15.7	15.7	15.8	16.3	17.5	17.2	15.7	16.5	16.3	16.3	15.7	15.4	14.7	14.8	14.3	15.2	15.6	15.5	16.2	15.6
Carson City, Nev.	5.2	4.5	4.6	3.8	3.9	4.0	4.3	4.0	3.5	3.0	2.9	3.5	3.9	4.9	5.7	6.9	7.2	8.2	8.9	8.2	6.1	5.7	5.6	5.1	5.2
Charleston, S. C.	12.8	13.3	12.8	12.9	13.2	13.0	13.4	13.6	14.5	15.5	15.4	15.7	15.6	15.7	15.4	15.1	14.4	12.5	12.1	12.6	12.2	12.1	12.6	12.7	13.7
Charlotte, N. C.	5.9	6.3	6.4	6.5	6.3	6.2	6.3	6.1	7.0	7.8	8.6	8.1	8.4	7.9	7.8	7.6	6.7	5.4	4.8	4.9	5.8	5.4	5.5	5.3	6.5
Chattanooga, Tenn.	5.2	5.7	6.3	5.5	5.2	5.0	5.4	5.4	7.5	8.6	9.5	9.6	10.1	10.5	10.4	10.0	9.9	8.8	7.5	6.9	6.6	6.6	5.7	5.3	7.4
Cheyenne, Wyo.	8.9	8.0	7.6	9.0	9.8	9.3	8.9	9.0	8.5	10.5	14.1	17.3	18.8	18.5	18.3	18.1	18.6	17.3	14.6	11.7	9.7	9.1	8.8	8.9	12.2
Chicago, Ill.	17.1	17.5	17.5	17.7	17.2	17.1	16.8	16.5	17.5	18.7	18.2	18.8	20.5	20.0	19.8	19.7	19.7	19.1	19.4	19.0	18.9	18.5	17.7	17.4	18.3
Cincinnati, Ohio	6.9	6.5	6.4	6.5	6.1	6.0	6.7	6.9	7.9	8.7	9.9	9.8	10.6	10.7	10.8	9.8	9.6	8.2	7.6	7.7	7.5	7.8	7.9	7.0	8.1
Cleveland, Ohio	16.6	17.2	17.2	16.4	16.3	17.3	17.1	17.4	16.8	16.9	16.9	16.6	16.1	14.9	13.9	14.4	13.9	13.3	12.7	13.8	15.4	16.0	16.4	16.8	15.8
Columbia, Mo.	7.5	7.7	7.7	7.9	8.3	8.2	8.5	8.3	8.6	9.1	9.8	10.2	10.0	10.2	10.3	10.6	10.3	9.3	8.2	8.2	8.5	8.6	8.5	8.1	8.9
Columbus, Ohio	7.8	7.8	7.7	7.8	7.9	7.8	7.7	7.8	8.9	10.1	9.8	10.0	10.0	10.1	10.4	9.8	8.8	7.3	7.5	7.9	8.1	8.2	8.2	8.2	8.6
Concordia, Kans.	7.1	7.8	7.7	8.1	7.6	7.9	7.7	7.7	8.2	9.2	9.8	10.2	10.8	10.5	11.0	10.7	10.4	9.2	7.9	6.5	7.4	7.7	7.9	8.1	8.6
Corpus Christi, Tex.	10.5	10.1	9.5	8.9	8.8	8.4	8.5	8.9	8.7	9.7	10.5	11.4	11.3	12.2	13.5	14.5	15.2	14.9	14.1	12.9	12.7	12.6	12.0	11.4	11.3
Davenport, Iowa	7.9	7.8	7.1	6.8	6.5	7.7	7.7	7.8	7.4	8.1	9.2	10.6	11.2	11.7	11.8	11.0	10.4	9.7	8.5	7.8	8.0	7.5	7.1	6.8	7.5
Denver, Colo.	7.1	8.1	7.5	6.9	6.6	6.5	6.8	7.4	7.1	6.6	7.5	7.6	9.0	10.4	10.5	10.1	11.4	11.0	8.9	10.2	8.8	7.6	7.8	7.1	8.6
Des Moines, Iowa	7.1	7.2	7.0	7.0	7.1	7.0	6.7	7.3	7.2	7.9	8.6	9.2	10.6	10.6	10.3	10.3	9.7	8.9	7.4	7.0	6.9	7.7	7.8	6.9	8.1
Detroit, Mich.	9.2	9.6	9.5	10.1	10.1	10.0	9.8	9.8	10.4	11.0	12.2	12.2	11.9	12.3	12.0	11.4	10.6	9.5	9.0	9.4	9.8	9.5	9.0	9.3	10.3
Dodge, Kans.	10.6	10.2	10.2	10.1	9.9	10.2	9.9	8.9	9.2	11.2	13.4	15.3	16.3	16.3	15.8	15.4	16.1	14.8	12.1	9.7	10.4	10.9	11.0	11.1	12.1
Dubuque, Iowa	7.5	7.8	7.5	7.4	7.5	7.4	7.8	8.5	9.0	9.6	11.3	12.0	12.0	11.5	11.5	11.2	10.8	9.7	8.7	8.6	8.0	8.0	7.6	7.6	9.1
Duluth, Minn.	11.8	10.9	10.6	11.0	11.9	11.9	11.6	11.1	10.5	10.9	11.5	11.4	12.0	12.4	13.1	13.7	13.0	11.1	10.1	9.5	9.7	10.6	11.8	13.1	11.4
Eastport, Me.	9.3	9.4	9.5	9.9	9.9	9.9	10.3	10.9	11.0	11.7	12.5	12.4	12.4	12.2	12.0	11.0	10.7	10.0	9.5	9.4	10.2	10.3	9.9	10.2	10.6
El Paso, Tex.	9.2	9.4	9.7	9.2	8.8	8.0	8.0	7.7	8.3	9.4	10.2	10.2	11.3	11.1	11.6	12.5	13.0	13.0	11.6	10.5	9.7	9.5	9.9	8.9	10.0
Erie, Pa.	13.3	13.5	14.1	14.0	13.5	13.5	13.4	13.0	13.0	13.0	13.2	13.1	13.0	13.1	13.0	12.0	10.6	10.6	11.3	12.1	12.2	12.5	12.6	13.4	12.7
Eureka, Cal.	4.3	3.0	3.7	2.8	3.2	3.8	2.9	2.5	2.6	3.4	3.4	3.8	3.5	4.4	4.4	6.1	7.1	7.9	8.4	7.1	6.5	4.7	4.0	4.3	4.5
Evansville, Ind.	6.4	6.3	7.1	6.4	6.3	6.4	6.4	6.6	7.4	8.8	9.5	9.8	10.2	9.6	9.7	10.1	9.6	8.5	7.1	6.5	6.4	6.5	6.6	6.3	7.7
Fort Canby, Wash.	12.6	12.6	12.5	12.6	12.2	11.7	12.7	12.5	12.1	12.6	13.0	12.0	12.0	14.5	14.7	14.7	15.4	14.7	14.2	13.9	13.6	14.3	14.6	13.5	13.9
Fort Smith, Ark.	4.7	4.9	4.8	4.9	5.1	4.9	5.1	4.9	4.9	5.0	5.3	5.2	5.2	5.6	5.5	5.5	5.4	5.5	4.7	4.8	4.2	4.2	4.6	4.6	5.0
Fresno, Cal.	4.2	3.9	3.5	3.7	4.1	4.1	4.1	3.7	3.6	3.5	3.8	3.9	4.4	4.3	4.4	4.4	4.4	4.0	4.5	3.7	3.2	3.2	3.6	3.7	3.9
Galveston, Tex.	9.0	8.6	8.3	8.4	8.6	8.4	8.8	9.4	9.3	10.6	11.3	11.1	11.1	11.0	10.9	10.5	10.2	10.1	9.5	8.8	8.3	8.5	9.3	9.2	9.5
Grand Haven, Mich.	8.8	8.7	8.7	8.9	9.2	9.3	9.3	9.1	9.5	10.4	10.7	12.3	13.4	12.4	12.4	11.7	11.2	10.6	9.2	9.6	9.4	9.6	9.3	9.4	9.4
Green Bay, Wis.	8.2	8.5	8.4	8.7	8.9	8.8	8.5	8.2	9.2	9.5	9.6	10.3	10.9	10.8	11.6	10.6	9.8	9.2	8.5	8.9	8.5	8.6	8.8	8.4	9.2
Hannibal, Mo.	8.4	8.5	8.3	8.9	9.2	9.2	8.9	9.3	9.8	11.1	12.0	12.4	12.5	12.7	12.4	12.6	11.7	10.0	9.1	8.5	9.1	9.7	9.1	9.1	10.1
Harrisburg, Pa.	6.3	6.2	5.6	5.8	6.3	6.1	6.3	7.0	8.3	9.3	9.7	10.2	10.7	10.3	10.0	10.4	9.4	8.5	8.0	8.2	7.5	7.2	6.2	6.5	7.9
Hatteras, N. C.	14.7	14.7	15.0	15.1	15.2	14.9	14.5	14.8	15.0	16.5	16.2	17.1	17.2	17.1	16.9	15.1	14.9	15.1	15.2	15.6	15.8	15.0	15.3	15.0	15.5
Hayre, Mont.	7.8	7.5	7.1	7.5	7.4	6.5	7.0	7.2	7.9	8.3	9.3	9.7	11.7	12.8	11.8	12.0	11.5	10.9	8.7	8.0	7.0	6.5	6.8	7.4	8.7
Helena, Mont.	6.9	5.7	6.2	6.2	6.4	5.8	5.1	5.2	5.7	5.6	5.8	5.7	6.7	7.5	9.3	8.6	8.3	8.5	7.8	7.8	8.3	8.9	8.7	7.5	7.2
Huron, S. Dak.	13.0	13.8	14.1	13.8	12.8	12.4	11.9	11.6	12.0	12.1	13.7	14.6	15.0	15.5	15.5	15.9	16.2	14.6	12.9	12.1	11.9	12.4	13.1	13.1	13.5
Idaho Falls, Idaho	7.8	7.4	6.6	6.3	6.8	7.0	6.9	6.7	7.1	7.0	7.5	8.9	9.8	11.5	12.1	12.9	13.1	12.							

TABLE VI.—Average wind movement, etc.—Continued.

Table with 24 columns: Stations, 1 a. m., 2 a. m., 3 a. m., 4 a. m., 5 a. m., 6 a. m., 7 a. m., 8 a. m., 9 a. m., 10 a. m., 11 a. m., Noon, 1 p. m., 2 p. m., 3 p. m., 4 p. m., 5 p. m., 6 p. m., 7 p. m., 8 p. m., 9 p. m., 10 p. m., 11 p. m., Midnight, Mean. Rows include cities like Omaha, Nebr., Philadelphia, Pa., etc.

TABLE VII.—Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the month of October, 1898.

Stations.	Component direction from—				Resultant.		Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.		N.	S.	E.	W.	Direction from—	Duration.
<i>New England.</i>							<i>North Dakota.</i>						
Eastport, Me.	19	21	14	23	s. 77 w.	9	Moorhead, Minn.	24	20	16	24	n. 63 w.	9
Portland, Me.	22	19	10	22	n. 76 w.	12	Bismarck, N. Dak.	31	7	16	24	n. 18 w.	25
Northfield, Vt.	16	38	3	12	s. 22 w.	24	Williston, N. Dak.	27	13	10	27	n. 51 w.	22
Boston, Mass.	19	18	13	22	n. 85 e.	11	<i>Upper Mississippi Valley.</i>						
Nantucket, Mass.	30	21	16	21	s. 79 w.	5	St. Paul, Minn.	20	17	30	20	n.	3
Woods Hole, Mass.*	6	14	9	12	s. 21 w.	8	La Crosse, Wis. †	12	13	6	9	s. 72 w.	3
Block Island, R. I.	18	19	17	25	s. 83 w.	8	Davenport, Iowa	16	23	20	19	s. 8 e.	7
New Haven, Conn.	27	16	10	18	n. 36 w.	14	Des Moines, Iowa	30	18	10	13	n. 14 w.	12
<i>Middle Atlantic States.</i>							Dubuque, Iowa	15	26	16	23	s. 32 w.	13
Albany, N. Y.	20	22	6	18	s. 81 w.	12	Keokuk, Iowa	19	24	18	19	s. 11 w.	5
Binghamton, N. Y. †	9	7	14	8	n. 72 e.	6	Cairo, Ill.	22	24	14	18	s. 73 w.	4
New York, N. Y.	16	11	25	21	n. 70 e.	15	Springfield, Ill.	22	23	9	17	s. 53 w.	10
Harrisburg, Pa. †	8	3	12	12	n.	5	Hannibal, Mo. †	2	10	5	12	s. 82 w.	7
Philadelphia, Pa.	22	17	20	18	n. 23 e.	5	St. Louis, Mo.	18	22	14	20	s. 56 w.	7
Atlantic City, N. J.	30	19	19	20	n. 45 w.	1	<i>Missouri Valley.</i>						
Cape May, N. J.	23	15	20	16	n. 27 e.	9	Columbia, Mo.*	7	13	7	10	s. 27 w.	7
Baltimore, Md.	16	17	23	18	s. 73 e.	5	Kansas City, Mo.	22	19	20	20	n.	3
Washington, D. C.	19	16	21	19	n. 34 e.	4	Springfield, Mo.	19	22	18	17	s. 34 e.	4
Lynchburg, Va.	25	12	21	21	n.	13	Lincoln, Nebr.	32	18	11	15	n. 16 w.	15
Norfolk, Va.	23	17	26	14	n. 63 e.	13	Omaha, Nebr.	28	17	14	20	n. 29 w.	12
Richmond, Va.	24	14	20	16	n. 22 e.	11	Sioux City, Iowa †	13	11	4	8	n. 63 w.	4
<i>South Atlantic States.</i>							Pierre, S. Dak.	29	10	16	23	n. 20 w.	20
Charlotte, N. C.	25	15	31	9	n. 66 e.	24	Huron, S. Dak.	24	15	18	23	n. 29 w.	10
Hatteras, N. C.	30	13	16	12	n. 13 e.	18	Yankton, S. Dak. †	11	6	4	15	n. 66 w.	12
Raleigh, N. C.	27	13	19	15	n. 16 e.	15	<i>Northern Slope.</i>						
Wilmington, N. C.	27	9	24	16	n. 24 e.	20	Havre, Mont.	17	15	13	32	n. 84 w.	19
Charleston, S. C.	32	13	19	12	n. 20 e.	20	Miles City, Mont.	19	19	5	25	w.	20
Augusta, Ga.	23	11	22	21	n. 5 e.	11	Helena, Mont.	11	27	3	42	s. 68 w.	42
Savannah, Ga.	31	14	20	14	n. 19 e.	18	Rapid City, S. Dak.	26	10	9	33	n. 66 w.	29
Jacksonville, Fla.	32	9	24	11	n. 29 e.	26	Cheyenne, Wyo.	26	13	5	31	n. 63 w.	29
<i>Florida Peninsula.</i>							Lander, Wyo.	13	23	15	28	s. 52 w.	16
Jupiter, Fla.	21	11	28	11	n. 60 e.	20	North Platte, Nebr.	29	18	7	33	n. 56 w.	19
Key West, Fla.	20	7	42	6	n. 70 e.	38	<i>Middle Slope.</i>						
Tampa, Fla.	43	4	20	11	n. 13 e.	40	Denver, Colo.	25	21	12	19	n. 60 w.	8
<i>Eastern Gulf States.</i>							Pueblo, Colo.	18	14	18	23	n. 51 w.	6
Atlanta, Ga.	22	12	25	20	n. 27 e.	11	Concordia, Kans.	24	26	11	16	s. 68 w.	5
Pensacola, Fla.	35	11	19	14	n. 12 e.	24	Dodge, Kans.	31	18	9	14	n. 21 w.	14
Mobile, Ala.	39	13	11	10	n. 2 e.	29	Wichita, Kans.	30	24	11	10	n. 9 e.	6
Montgomery, Ala.	26	12	24	14	n. 36 e.	16	Oklahoma, Okla.	19	30	10	12	s. 10 w.	11
Vicksburg, Miss.	25	17	29	10	n. 67 e.	21	<i>Southern Slope.</i>						
New Orleans, La.	28	14	24	9	n. 47 e.	20	Abilene, Tex.	16	33	8	17	s. 28 w.	19
<i>Western Gulf States.</i>							Amarillo, Tex.	19	30	10	15	s. 24 w.	12
Shreveport, La.	13	23	29	13	s. 51 e.	21	<i>Southern Plateau.</i>						
Fort Smith, Ark.	11	9	29	18	n. 80 e.	11	El Paso, Tex.	20	5	27	24	n. 11 e.	15
Little Rock, Ark.	14	19	17	24	s. 54 w.	9	Santa Fe, N. Mex.	18	25	23	13	s. 55 e.	12
Corpus Christi, Tex.	17	23	27	6	s. 77 e.	22	Flagstaff, Ariz.	21	12	18	20	n. 13 w.	9
Fort Worth, Tex. †	5	12	9	10	s. 8 w.	7	Phoenix, Ariz.	21	5	24	21	n. 11 e.	16
Galveston, Tex.	19	21	26	10	s. 83 e.	16	Yuma, Ariz.	29	1	18	24	n. 12 w.	29
Palestine, Tex.	24	21	21	9	n. 76 e.	12	Independence, Cal.	23	20	12	24	n. 76 w.	12
San Antonio, Tex.	25	18	26	7	n. 70 e.	20	<i>Middle Plateau.</i>						
<i>Ohio Valley and Tennessee.</i>							Carson City, Nev.	19	15	9	30	n. 79 w.	21
Chattanooga, Tenn.	20	21	18	20	s. 63 w.	2	Winnemucca, Nev.	26	18	8	21	n. 58 w.	15
Knoxville, Tenn.	23	15	18	18	n.	8	Salt Lake City, Utah.	23	13	17	24	n. 35 w.	12
Memphis, Tenn.	19	19	17	22	w.	5	<i>Northern Plateau.</i>						
Nashville, Tenn.	16	20	17	22	s. 51 w.	6	Baker City, Oreg.	15	23	16	14	s. 14 e.	8
Lexington, Ky.	11	25	20	19	s. 4 e.	14	Idaho Falls, Idaho	19	32	3	17	s. 47 w.	19
Louisville, Ky.	11	25	18	22	s. 16 w.	15	Spokane, Wash.	20	21	17	16	s. 63 e.	2
Evansville, Ind. †	10	13	9	10	s. 18 w.	4	Walla Walla, Wash.	8	35	13	17	s. 8 w.	27
Indianapolis, Ind.	16	25	12	22	s. 48 w.	14	<i>North Pacific Coast Region.</i>						
Cincinnati, Ohio	13	17	27	20	s. 60 e.	8	Fort Canby, Wash.	15	20	27	14	s. 69 e.	14
Columbus, Ohio	13	22	24	19	s. 29 e.	7	Neah, Wash.	2	8	32	23	s. 56 e.	11
Pittsburg, Pa.	20	24	20	18	s. 27 e.	4	Port Crescent, Wash.	1	7	13	15	s. 18 w.	6
Parkersburg, W. Va.	12	24	21	16	s. 23 e.	13	Seattle, Wash.	16	24	14	15	s. 5 w.	12
<i>Lower Lake Region.</i>							Tacoma, Wash.	17	27	8	24	s. 58 w.	19
Buffalo, N. Y.	12	23	20	17	s. 15 e.	11	Portland, Oreg.	18	22	13	24	s. 70 w.	12
Oswego, N. Y.	11	31	25	14	s. 29 e.	23	Roseburg, Oreg.	24	11	17	23	n. 25 w.	14
Rochester, N. Y.	11	30	13	26	s. 34 w.	23	<i>Middle Pacific Coast Region.</i>						
Erie, Pa.	13	33	12	16	s. 11 w.	20	Eureka, Cal.	24	28	12	30	s. 77 w.	18
Cleveland, Ohio	6	33	27	14	s. 26 e.	30	Red Bluff, Cal.	34	16	12	11	n. 3 e.	18
Sandusky, Ohio	8	32	15	21	s. 14 w.	25	Sacramento, Cal.	30	22	12	14	n. 14 w.	8
Toledo, Ohio	9	27	18	23	s. 16 w.	19	San Francisco, Cal.	8	16	4	40	s. 77 w.	37
Detroit, Mich.	12	27	22	18	s. 15 e.	16	<i>South Pacific Coast Region.</i>						
<i>Upper Lake Region.</i>							Fresno, Cal.	24	14	12	33	n. 65 w.	23
Alpena, Mich.	17	23	12	18	s. 45 w.	8	Los Angeles, Cal.	7	14	2	50	s. 82 w.	48
Grand Haven, Mich.	19	22	26	13	s. 77 e.	13	San Diego, Cal.	37	8	9	26	n. 30 w.	34
Marquette, Mich.	25	20	12	18	n. 50 w.	8	San Luis Obispo, Cal.	33	12	5	15	n. 25 w.	23
Port Huron, Mich.	13	28	19	18	s. 4 e.	15	<i>West Indies.</i>						
Sault Ste. Marie, Mich.	19	14	29	13	n. 73 e.	17	Basseterre, St. Kitts Island	25	2	43	3	n. 60 e.	46
Chicago, Ill.	17	23	16	20	s. 34 w.	7	Bridgetown, Barbados	24	3	50	0	n. 67 e.	54
Milwaukee, Wis.	21	25	11	17	s. 56 w.	7	Colon, U. S. C.	6	41	25	9	s. 25 e.	38
Green Bay, Wis.	19	24	17	18	s. 11 w.	5	Willemstad, Curaçao	5	8	55	2	s. 87 e.	26
Duluth, Minn.	34	10	16	27	n. 25 w.	26							

* From observations at 8 p. m. only.

† From observations at 8 a. m. only.

TABLE VIII.—Thunderstorms and auroras, October, 1898.

States.	No. of stations.	Days.																															Total.							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No.	Days.						
Alabama.....	55				1			1		1	1	1									2														9	7	T.			
Arizona.....	56																																		0	0	A.			
Arkansas.....	59					3	7																												0	0	T.			
California.....	180	2	2	3																															41	10	A.			
Colorado.....	72		1																																0	0	T.			
Connecticut.....	21				2																														11	0	A.			
Delaware.....	5																																		0	0	T.			
Dist. of Columbia.....	4																																		0	0	A.			
Florida.....	45			2	1																														10	0	T.			
Georgia.....	55				1		3																												0	0	A.			
Idaho.....	88																																		12	0	T.			
Illinois.....	86		1				4	11																											33	0	A.			
Indiana.....	57																																		12	0	T.			
Indian Territory.....	7																																		0	0	A.			
Iowa.....	120				10	4	2																												37	1	T.			
Kansas.....	85					1		7		6	1																								29	0	A.			
Kentucky.....	48								1																											0	0	T.		
Louisiana.....	46	1	1	3	4	5	5	2	4	1	2	2																							53	0	A.			
Maine.....	18																																			0	0	T.		
Maryland.....	40				1					1																										1	2	A.		
Massachusetts.....	59				1	6																														7	1	T.		
Michigan.....	104			2	2	1	1																													7	1	A.		
Minnesota.....	87	1			7																															24	3	T.		
Mississippi.....	43				2	2	5	1	4																											24	0	A.		
Missouri.....	95	1		2		1	1																													67	15	T.		
Montana.....	40																																			1	1	A.		
Nebraska.....	144																																				32	6	T.	
Nevada.....	50																																				0	0	A.	
New Hampshire.....	21				1	5																															6	2	T.	
New Jersey.....	51				5																																8	3	A.	
New Mexico.....	34																																				8	2	T.	
New York.....	113				5	2																															11	1	A.	
North Carolina.....	57	1			1	3																															21	0	T.	
North Dakota.....	52	2	1																																		7	4	A.	
Ohio.....	134	1																																			4	4	T.	
Oklahoma.....	21																																				4	5	A.	
Oregon.....	72																																				0	0	T.	
Pennsylvania.....	105				3	1																															7	0	A.	
Rhode Island.....	8																																				0	0	T.	
South Carolina.....	40		1	1	1	3	2																														15	0	A.	
South Dakota.....	56	1			1																																13	0	T.	
Tennessee.....	59			1																																	4	0	A.	
Texas.....	89					6	5	3	2																												40	10	T.	
Utah.....	38																																				0	0	A.	
Vermont.....	14				1																																1	1	T.	
Virginia.....	48			1		4	1																														1	4	A.	
Washington.....	50	1	2																																		4	3	T.	
West Virginia.....	33																																				1	0	A.	
Wisconsin.....	60				1	1	4	1																														18	0	T.
Wyoming.....	17					1																															2	0	A.	
Sums.....	2,871	T.	10	10	13	53	48	40	41	24	78	60	27	9	7	11	7	59	28	6	22	27	12	2	1	12	6	1	0	3	1	1	0	619	35	T.				
		A.	0	0	0	2	0	0	3	3	1	0	1	1	4	0	2	0	0	0	0	2	3	0	0	1	1	1	2	3	1	0	1	0	35	0	A.			

TABLE IX.—Average hourly sunshine (in percentages), October, 1898.

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Hours of sunshine.			
		A. M.								P. M.								Total.			Personal estimate.
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Percent of possible.	
Albany, N. Y.	T.	0	21	22	33	50	53	52	50	47	51	50	38	30			145.5	341.8	43	38	
Atlanta, Ga.	T.	33	37	56	57	58	59	64	58	53	57	61	61	57			204.3	350.9	58	56	
Atlantic City, N. J.	P.	36	61	64	65	70	73	70	63	68	66	67	65	58			224.1	346.0	66	50	
Baltimore, Md.	T.	45	36	53	63	71	76	81	79	80	75	70	53	45			231.8	345.0	67	56	
Binghamton, N. Y.	T.	0	7	11	20	37	50	52	49	50	45	32	14	14			114.5	342.5	33	26	
Bismarck, N. Dak.	P.	0	20	21	36	44	46	50	42	48	47	39	33	35			182.3	336.7	39	35	
Boston, Mass.	T.	60	44	44	54	52	55	48	50	52	52	48	50	44			170.8	342.5	50	46	
Buffalo, N. Y.	T.	0	24	30	55	60	66	63	64	62	56	39	27	40			170.2	341.8	50	26	
Charleston, S. C.	T.	15	31	46	58	64	49	50	64	75	69	57	45	35			192.3	351.5	55	54	
Chattanooga, Tenn.	T.	33	33	39	51	56	59	65	64	58	60	57	54	42			188.6	350.1	54	56	
Cheyenne, Wyo.	P.	82	62	67	66	73	78	80	83	83	80	72	60	51			250.0	343.9	73	59	
Chicago, Ill.	T.	55	45	42	41	50	55	59	63	59	56	49	42	47			176.2	346.0	51	45	
Cincinnati, Ohio	T.	0	29	30	34	37	39	40	37	35	35	29	29	21			114.6	342.5	33	28	
Cleveland, Ohio	T.	0	37	40	37	43	44	47	49	52	52	44	42	36			152.1	346.0	44	31	
Columbia, Mo.	T.	0	37	40	37	43	44	47	49	52	52	44	42	36			152.1	346.0	44	31	
Columbus, Ohio.	T.	100	50	48	49	60	58	55	60	54	54	48	34	29			176.9	344.9	51	37	
Denver, Colo.	P.	82	75	78	86	89	90	88	82	80	82	73	70	70			279.3	344.9	81	62	
Des Moines, Iowa.	T.	0	24	26	28	37	41	42	48	46	44	40	44	43			132.5	342.5	39	40	
Detroit, Mich.	T.	0	25	26	37	48	51	52	54	53	48	37	16	11			137.4	342.5	40	30	
Dodge, Kans.	P.	50	68	77	77	80	81	79	75	74	77	69	63	64			257.8	347.3	74	63	
Dubuque, Iowa	T.	0	11	16	27	41	51	43	38	39	35	29	19	23			109.5	342.5	32	32	
Eastport, Me.	P.	0	20	26	35	46	51	48	42	50	47	46	38	43			141.0	339.6	42	32	
Erie, Pa.	T.	0	26	29	35	41	47	50	49	48	44	33	22	18			131.7	342.5	38	41	
Eureka, Cal.	P.	0	30	40	41	49	59	68	70	67	65	56	55	49			188.9	343.9	55	48	
Fresno, Cal.	T.	50	67	68	76	80	84	84	86	85	80	77	76	71			271.3	347.9	78	79	
Galveston, Tex.	P.	0	44	77	85	90	92	93	96	95	96	95	94	75			307.8	355.9	86	75	
Harrisburg, Pa.	T.	0	36	35	45	51	59	62	55	59	54	43	39	38			168.2	344.9	49	45	
Helena, Mont.	P.	0	28	30	37	45	47	51	52	52	51	53	51	42			153.7	336.7	46	42	
Huron, S. Dak.	T.	100	41	46	53	58	55	56	58	58	54	50	41	36			177.2	340.5	52	44	
Idaho Falls, Idaho*	T.	34	37	64	67	73	74	74	68	67	67	64	55				143.7	326.6	63	53	
Indianapolis, Ind.	T.	18	29	29	29	41	42	45	44	45	39	34	32	30			128.2	344.9	37	29	
Jacksonville, Fla.	T.	0	25	45	54	63	67	65	71	73	65	57	45	22			198.2	354.7	56	50	
Kansas City, Mo.	P.	0	37	47	50	51	51	51	44	46	46	40	42	40			158.6	346.0	46	44	
Key West, Fla.	T.	54	37	55	69	67	72	79	71	66	64	51	38	20			211.2	358.6	59	41	
Knoxville, Tenn.	T.	33	25	36	53	57	64	68	64	65	62	57	43	41			187.9	348.9	54	50	
Little Rock, Ark.	T.	33	48	47	59	60	66	66	67	70	69	60	57	52			212.4	350.1	61	50	
Los Angeles, Cal.	P.	67	62	65	73	82	86	91	90	92	94	91	89	96			294.0	350.9	84	73	
Louisville, Ky.	T.	50	39	40	44	56	58	61	60	57	55	53	48	45			180.6	347.3	52	35	
Minneapolis, Minn.	T.	0	20	23	32	32	37	43	44	40	38	32	19	22			111.4	339.8	33	33	
Nashville, Tenn.	T.	33	55	62	71	77	75	74	69	69	65	59	54	57			230.3	348.9	66	58	
New Orleans, La.	T.	33	51	40	56	73	83	77	81	77	73	54	44	41			224.8	354.7	63	71	
New York, N. Y.	T.	0	16	30	42	55	52	53	59	55	60	51	34	30			159.4	343.9	47	47	
Northfield, Vt.	P.	100	24	27	30	41	44	46	38	35	44	41	34	22			124.5	340.5	37	26	
Oklahoma, Okla.	T.	67	65	71	83	86	88	89	90	83	76	71	73	75			282.5	350.1	81	75	
Omaha, Nebr.	P.	36	26	25	34	38	52	54	50	53	51	47	44	33			148.3	343.9	43	42	
Parkersburg, W. Va.	T.	18	18	16	25	45	55	55	56	46	41	40	21	19			131.0	346.0	38	43	
Philadelphia, Pa.	T.	0	52	51	67	72	81	83	80	72	67	54	51	48			227.6	344.9	66	47	
Phoenix, Ariz.	P.	100	97	97	100	98	96	95	94	96	94	93	88	85			333.5	351.5	95	85	
Pittsburg, Pa.	T.	0	7	10	29	44	53	55	52	50	42	38	31	24			128.9	343.9	37	34	
Portland, Me.	T.	0	22	32	46	51	61	62	62	61	50	54	37	28			167.1	340.5	49	43	
Portland, Oreg.	T.	0	24	23	31	42	54	61	54	51	47	32	29	29			138.6	338.5	41	45	
Raleigh, N. C.	T.	0	36	44	58	63	69	72	72	69	66	53	48	39			203.9	348.9	58	53	
Rochester, N. Y.	T.	0	29	34	27	37	48	54	54	51	48	34	30	23			137.8	341.8	40	37	
St. Louis, Mo.	T.	0	28	37	46	52	58	59	64	60	49	48	41	38			170.5	346.0	49	43	
St. Paul, Minn.	P.	0	27	29	35	38	31	30	37	39	37	37	38	40			114.8	339.8	34	31	
Salt Lake City, Utah.	P.	36	55	60	71	76	74	69	70	70	58	61	55	61			244.8	343.9	65	51	
San Diego, Cal.	P.	67	37	37	50	71	89	93	96	96	94	89	82	81			268.7	351.5	76	79	
San Francisco, Cal.	T.	10	17	54	82	95	94	93	96	96	92	88	76	36			277.0	347.3	80	59	
Santa Fe, N. Mex.	P.	100	80	85	89	91	93	94	91	90	85	90	88	87			310.1	348.9	89	80	
Savannah, Ga.	T.	40	46	47	60	75	80	75	71	67	73	55	56	50			224.9	352.8	64	50	
Seattle, Wash.	T.	18	13	15	18	21	23	29	34	29	12	3	7				65.5	335.8	19	38	
Spokane, Wash.	T.	44	37	44	61	74	73	74	67	57	43	26	39				183.9	335.8	55	46	
Tacoma, Wash.	T.	0	20	21	44	65	75	81	83	74	75	59	30	31			193.7	336.7	58	40	
Tampa, Fla.	T.	67	52	52	60	68	60	64	63	65	67	52	46	56			212.7	336.3	60	59	
Topeka, Kans.	T.	36	55	55	53	52	59	55	52	51	47	47	54	52			182.1	346.0	53	44	
Vicksburg, Miss.	T.	20	59	61	64	68	73	71	70	71	66	58	45				232.0	352.8	66	67	
Washington, D. C.	P.	0	31	35	50	57	64	70	65	67	65	60	52	47			194.1	346.0	56	56	
Wilmington, N. C.	T.	0	35	47	59	62	65	65	67	62	57	45	37	19			187.6	350.9	53	43	
Yankton, S. Dak.	T.	0	17	31	54	68	69	76	76	74	67	58	48	33			199.3	341.8	58	42	
Bridgetown, Barbados	T.	16	18	30	55	62	63	51	53	51	40	31	15	15			149.0	367.3	41	35	

*All values for 21 days only.

TABLE XI.—Excessive precipitation, by stations, for October, 1898.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Alabama.</i>						
Ashville		Inches.	Inches.	Ins.	h.m.	
Daphne			2.92	7		
Gadsden	13.43		3.00	3		
Lock No. 4			4.55	7		
Maple Grove			3.40	4		
Opelika			3.20	3		
Riverton			5.50	3-4		
Rock Mills			2.90	7		
Talladega			6.50	3-4		
Valleyhead			3.10	4		
			3.13	4		
<i>Arkansas.</i>						
Brinkley			5.20	1-3		
Conway			2.65	19-20		
Hot Springs			2.50	1-2		
Jonesboro			3.50	1		
Marvell			5.85	*		
Mena			3.25	19		
Mount Nebo			2.65	6	1.42	1 00
Rison			2.50	19		
Stuttgart			8.29	1		
Warren			2.72	19-20	2.00	2 00
Winslow			3.84	9-10		
<i>Connecticut.</i>						
Lake Konomoc	10.67		3.01	5		
<i>Florida.</i>						
Bartow					2.08	1 30
Brooksville					1.02	0 40
Boca Raton	15.15		5.20	19		
Do.			5.75	21		
Crawfordsville			6.43	29		
Earnestville			2.60	3		
Grasmere			2.60	3		
Huntington			2.88	25		
Jacksonville			3.59	1-2		
Jupiter	10.89		2.53	19-20		
Do.			3.32	21-22	1.00	1 00
Key West	16.99		7.42	20-22		
Lake Butler			3.50	2		
Lake City			3.75	3		
Lemon City	14.65		5.10	8-10		
Liveoak					1.84	1 00
Macclenny			2.57	1-2		
Ocala			2.86	25		
Pensacola			3.09	20-21		
St. Francis			2.60	2		
Do.			3.10	25		
<i>Georgia.</i>						
Adairsville			3.30	4		
Allentown			6.27	2-3		
Canton			3.05	4		
Cartersville			3.45	2-3		
Cedar town			3.12	4		
Clayton	14.52		8.85	3-4		
Covington			3.59	2		
Crescent			4.05	2		
Dahlonega			5.55	3-4		
Diamond	11.77		5.55	4		
Do.			2.85	17-18		
Fitzgerald			3.10	1		
Fleming			4.35	2		
Gainesville			2.90	4		
Gillsville			4.00	4		
Greenbush	10.05		6.00	3-4		
Harrison			2.50	2		
Hawkinsville			6.25	3		
Jesup			5.25	2		
Louisville			3.58	3		
Macon			2.78	2-3		
Marietta			2.95	4		
Marshallville			4.60	2		
Millen			3.82	7		
Newnan			3.69	4		
Piscola			3.35	28-29		
Point Peter			3.82	2-3		
Quitman			3.36	29		
Ramsey			4.10	4		
Resaca			2.97	4		
Rome			3.18	4		
Savannah			2.85	2		
Talbotton			4.05	3		
Tallapoosa			3.54	3-4		
Thomasville			3.50	29		
Waycross			3.75	3-4		
Waynesboro			3.15	2-3		
<i>Illinois.</i>						
Cobden			3.30	1		
Halliday			2.67	1		
<i>Indiana.</i>						
Angola			4.75	11-12		
Boonville			3.24	10-11		
Evansville			2.58	10-11		
Peru			3.00	11	1.22	0 40
Seymour			2.60	10		
Topeka					1.97	1 00
<i>Indian Territory.</i>						
Wagoner			4.16	10		
<i>Iowa.</i>						
Albia			3.00	16		
Cedarfalls			2.78	16		
Independence			2.52	17		

TABLE XI.—Excessive precipitation—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Kansas.</i>						
Dodge		Inches.	Inches.	Ins.	h.m.	
Edmonton				1.00	0 41	9
<i>Kentucky.</i>						
Greensburg			2.77	7		
Henderson			3.18	8		
Mount Sterling			4.26	10		
Paducah			2.65	7		
Richmond			4.60	*		
			2.50	7		
<i>Louisiana.</i>						
Donaldsonville			2.70	20		
Port Eads	14.37		11.33	*		
Sugartown			2.70	7		
<i>Maine.</i>						
Bar Harbor			2.80	14-15		
Do.			2.95	26-27		
Belfast			2.84	26-27		
Eastport			2.50	22-23		
<i>Maryland.</i>						
Bachmans Valley			2.56	18-19		
Boettcherville			2.50	18		
Do.			3.00	21		
Cumberland			3.21	21-22		
Frostburg			2.95	18		
Do.			2.95	21		
Mount St. Marys Col			2.63	21-22		
<i>Massachusetts.</i>						
Fallriver			3.13	27-22		
Do.			2.55	26-27		
Fitchburg			2.91	5		
Groton			2.67	5		
Longplain			2.57	26-27		
Ludlow Center			2.50	4-5		
Middleboro			2.51	26-27		
New Bedford	10.14		2.71	26-27		
Pittsfield			2.50	5		
Somerset			2.68	21-22		
Taunton	11.51		4.35	21-22		
Do.			2.80	26-27		
Williamstown			2.92	4-5		
<i>Michigan.</i>						
Hanover			2.50	11		
Hillsdale			2.84	11		
Mottville			3.33	4		
Somerset			2.60	11		
<i>Minnesota.</i>						
Willmar			2.75	9		
<i>Mississippi.</i>						
Edwards			3.25	7		
Vicksburg					1.00	0 49
<i>Missouri.</i>						
Avalon			3.80	16-17		
Bethany			3.20	16-17		
Brunswick			3.35	17		
Carrollton			2.82	16-17		
Downing			3.32	16		
Gordonville			2.68	10		
Gorin			2.76	16		
Houstonia			2.61	17		
Kansas City			2.61	16-17		
Lamar			3.15	17		
Marblehill			2.81	1		
Miami			2.53	17		
New Madrid			3.65	*		
Phillipsburg			2.52	10		
Poplar Bluff			3.52	1		
Sikeston			4.51	*		
Sublett			4.00	16		
<i>Nebraska.</i>						
Brokenbow			3.90	9-10		
<i>New Hampshire.</i>						
Keene			2.70	5		
North Conway			2.85	26-27		
Peterboro			2.70	5		
<i>New Jersey.</i>						
Bridgeton			2.72	26-27		
<i>New York.</i>						
Canajoharie			2.71	5		
<i>North Carolina.</i>						
Abshers			2.77	21		
Beaufort			13.71	7.40		
Flatrock			12.03	3.10		
Hatteras			3.82	21-22	1.00	1 00
Do.			2.80	26	1.30	1 00
Hendersonville			11.64	2.62		
Horsecove			18.42	11.00		
Do.			2.86	17		
Linville			18.49	7.40		
Do.			5.75	18		
Marion			3.05	21		
Morganton			2.50	20		
Pantego			10.15	4.36	11-12	
Patterson			2.65	21		
Southport			11.82	3.96	12	
Waynesville			2.50	3		
Wilmington			2.87	11-12	1.06	1 00
<i>North Dakota.</i>						
Bismarck					1.00	0 25
Milton			3.00	19		
<i>Ohio.</i>						
Elyria			3.03	4-5		

TABLE XI.—Excessive precipitation—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch. or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
		Inches.	Inches.	Ins.	h.m.	
<i>Oklahoma.</i>						
Guthrie		2.70	9-10			
Stillwater		3.84	9-10			
<i>Pennsylvania.</i>						
Harrisburg				1.14	0 52	19
Pottstown				1.00	1 00	14
Sinnamahoning		2.62	22			
Wellsboro		4.25	21-22			
<i>Rhode Island.</i>						
Bristol		2.27	21-22			
Kingston	12.05	3.45	22			
Narragansett		2.55	21-22			
<i>South Carolina.</i>						
Blackville		2.58	2-3			
Gillisonville		4.90	1-2			
Holland		2.95	21			
Mount Carmel		2.53	2-3			
Port Royal		2.70	2			
Shaws Fork		2.82	2-3			
Summerville		4.08	2			
Trial		2.62	2-3			
<i>South Dakota.</i>						
Tyndall		2.93	9			
<i>Tennessee</i>						
Lafayette		3.25	7			
Oakhill		3.40	7			
Trenton		3.15	7			
<i>Texas.</i>						
Boerne		3.30	5			
Fort Worth				1.07	0 42	5

TABLE XI.—Excessive precipitation.—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch. or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
		Inches.	Inches.	Ins.	h.m.	
<i>Texas—Continued.</i>						
Georgetown		2.60	7			
Huntsville		4.00	6			
Jasper				2.00	2 00	16
<i>Vermont.</i>						
Bennington		3.80	4			
Brattleboro	10.84					
Jacksonville		3.20	4-5			
Vernon		3.57	4-5			
<i>Virginia.</i>						
Charlottesville		3.20	18			
Colemans Falls		2.70	21			
Dwale		3.02	8			
Hot Springs	11.80					
Miller School	10.15	2.98	18			
Salem		2.68	17-18			
Stanardsville	12.01	5.50	18			
Do		4.25	22			
<i>Washington.</i>						
Snohomish		3.81	13			
<i>West Virginia.</i>						
Harpers Ferry		2.94	18			
<i>West Indies.</i>						
Bridgetown				1.54	1 20	4
Colon	12.08	2.54	24	1.85	0 37	20
Do		2.69	27-28	1.07	0 45	24
Do				1.53	1 15	28

*September 30—October 1.